

Fusion3

F200 3D Printer

TROUBLESHOOTING: FAN ERRORS

Revision 01/26/2026

TROUBLESHOOTING FAN ERRORS

How to diagnose and fix fan errors on the F200.

INTRODUCTION

The F200 utilizes closed-loop RPM monitoring on the following critical system fans:

- Part cooling blower
- Print head cold side fan
- Toolhead cooling fan
- Filter circuit fan

When these fans are on, (or in the case of the blower, running at 100%), the RPM of the fan is checked against a stored value to detect stall, underspeed, and overspeed conditions. Any RPM mismatch must persist for several seconds, to filter out transient conditions or noise in the signal.

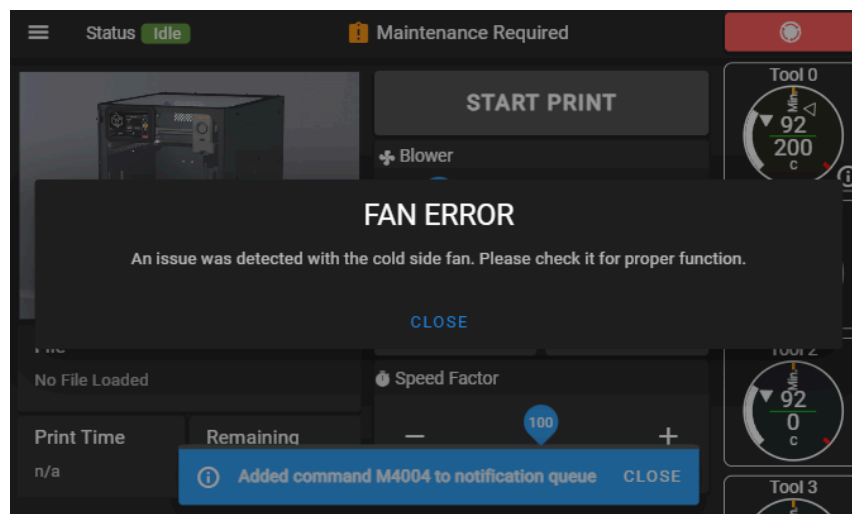
Stall and underspeed conditions are relatively self-explanatory; overspeed conditions are monitored because they may indicate an aerodynamic stall of the fan, or blocked air intake.

What Happens When A Fan Error is Detected?

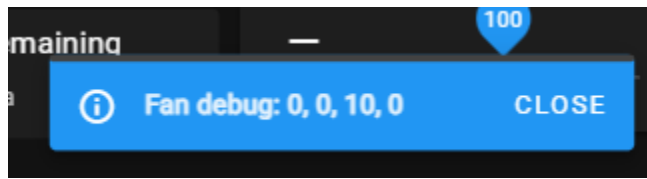
If a print is running, the printer will pause the print.

The interior LEDs will turn red to indicate a fault condition.

A popup message will be generated, telling you what fan has the error.



A blue popup message at the bottom of the screen will be generated. This is a debugging message that shows what fan has the error, and how long it has persisted. If the fan error happens continuously for a long period, you will see a lot of these; that's normal.



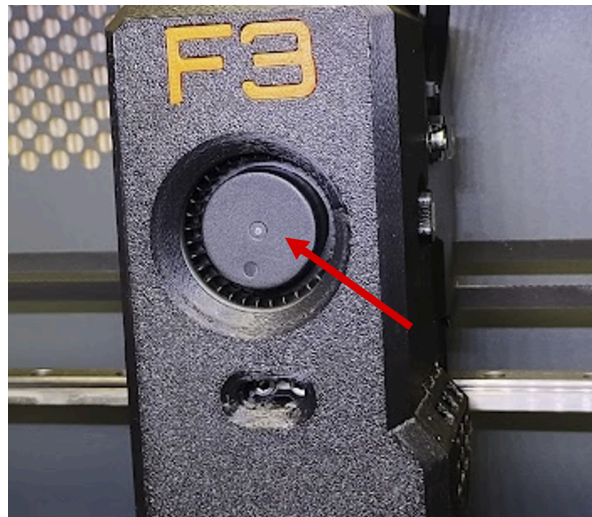
If you have email notifications enabled in the PrintWatch plugin, you will get an email about a M4004 error.

If the fan error is transient and self-resolves, the LEDs will go back to white. In this condition, the printer will not automatically resume the print. So you'll still see a dialog box on the screen, but if you resume your print the printer should operate normally.

Normal Fan Operation

Blower (AKA Part Cooling Fan)

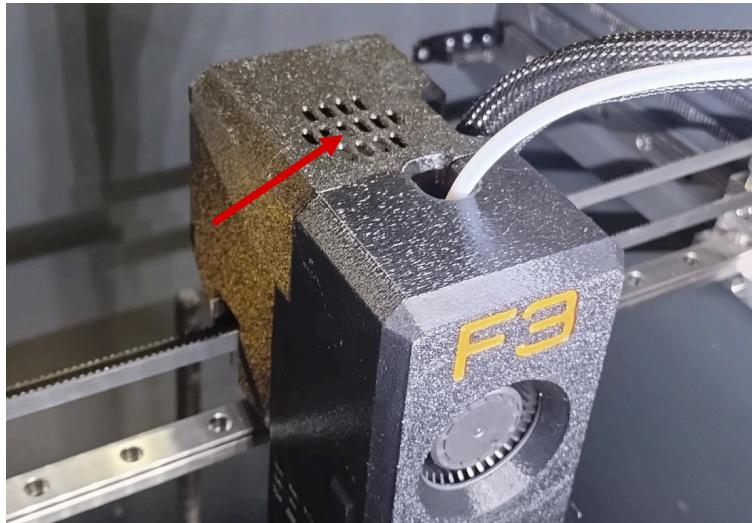
Centrifugal fan with its intake on the front of the toolhead.



This fan is controlled by the slicer. It will run intermittently throughout your print as determined by the material you're printing, layer time, overhangs/bridges, and other parameters of your print. It's normal for you to see its speed change frequently.

Toolhead Fan

Axial 25x10mm fan mounted in the top of the toolhead. This fan moves air through the toolhead to cool the electronics and extruder motor.

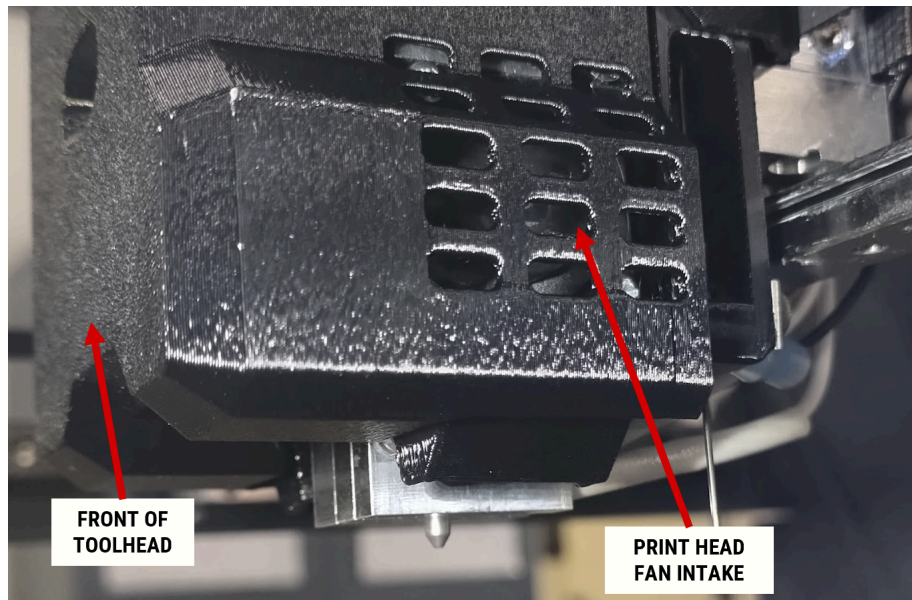


This fan runs any time the print head temperature is $> 45^{\circ}\text{C}$.

If it is not running, the electronics can overheat and stop working properly. Or you may get filament jams with a low temperature material such as PLA since the heat from the extruder motor and electronics may soak into the filament and soften it.

Cold Side Fan (AKA Print Head or Hotend Fan)

Axial 25x10mm fan mounted inside the toolhead on the right side.



This fan runs any time the print head temperature is $> 45^{\circ}\text{C}$.

If it is not running, you will get filament jams in the print head. Depending on the material you're printing and other parameters, this may happen quickly or up to 30 minutes after the fan develops an issue.

Filter Circuit Fan

Centrifugal blower mounted in the filter housing assembly. Please note this is a different blower than the part cooling fan and they are not interchangeable.

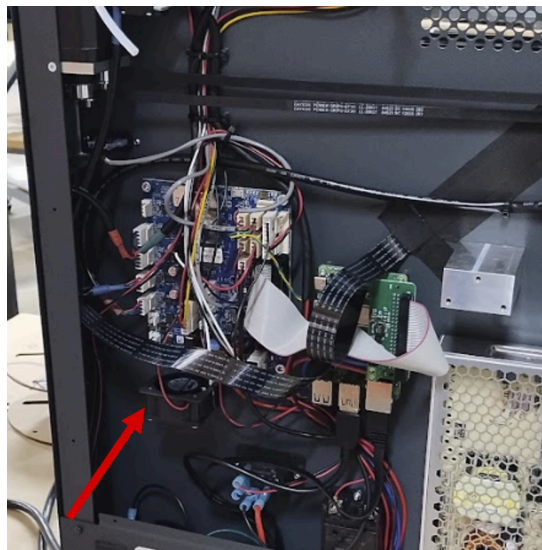


This fan runs any time the print head is $>40^{\circ}\text{C}$ OR the bed is $>40^{\circ}\text{C}$.

If this fan is not running, the filter will not be removing particulates, VOCs, and fumes from the chamber. It will also not be distributing the air in the chamber for more even chamber temperature.

Electronics Cooling Fan

This is a 40x20 axial fan mounted in the electronics bay.



This is the only fan in F200 that is not closed-loop monitored; if this fan stops running no fan errors will be generated. This fan runs intermittently to cool the electronics as needed.

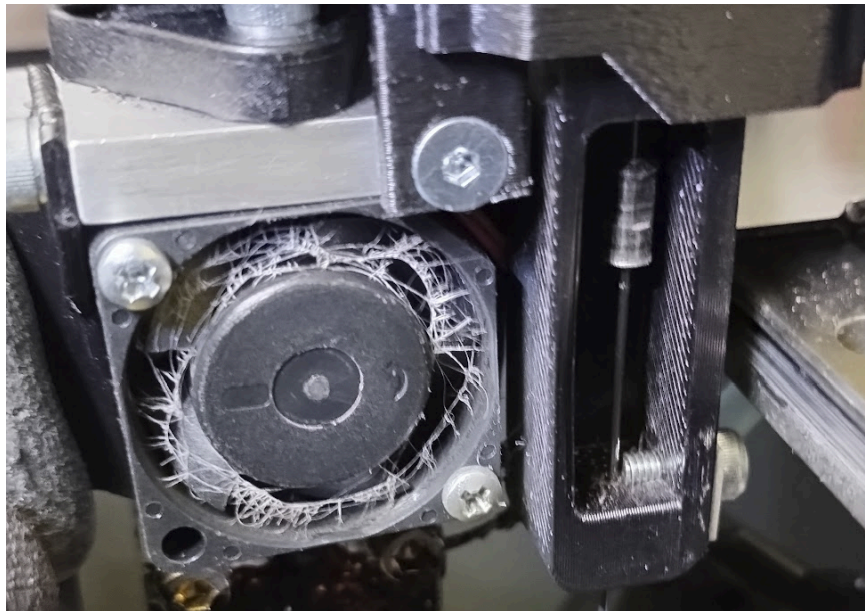
If this fan stops working, you will likely not encounter any issues unless you are operating in a hot ambient environment and running high temperature (ABS or hotter) materials.

WHAT TO DO IF YOU ENCOUNTER A FAN ERROR

1. **Determine what fan has the problem.** Use the dialog box error message and/or the fan debug outputs to determine which fan you need to check.

The fan debug output shows 4 numbers, they correspond to the fans in this order:
(blower, toolhead fan, cold side fan, filter fan)

2. **Inspect the fan for problems.** Visually inspect the fan to see if it's stuck, jammed, if the intake is obstructed, or if the wiring is damaged. If a print is not running you can heat the print head up manually and see if the fan turns on when it should.
 - a. On the cold side fan, it's possible for one of the blades to be damaged. This will cause less airflow, rotor imbalance, and more noise. Running in this condition will likely lead to premature bearing failure, so we recommend replacing the fan as soon as this issue is noted.



Example of clogged fan

3. **Next steps:**

- a. **If you can't find a problem:** Try to start or resume your print and see if the problem happens again.
- b. **If the problem is transient in nature:** This means you see a fan error on initial spin-up but it goes away (watch for the LEDs to go back to white) shortly after. Check your configuration

version on **Utilities > Info** page. If it's older than 13, please reach out to Fusion3 Customer Support for an update that may resolve your issue.

SERVICING OR REPLACING FANS

The fans we use in F200 aren't expensive, so when in doubt, it's often easiest to simply replace them. This section describes the general steps to access each fan. See our other documentation for more details.

Toolhead Blower

Remove the front toolhead housing and toolboard rear panel ([INSTRUCTIONS](#)). This blower is held in by friction and 2 plastic-threading screws. You can either replace the blower, or purchase an entire new toolhead housing assembly from us [HERE](#).

Toolhead Fan

Remove the front toolhead housing. Remove the toolboard panel ([INSTRUCTIONS](#)). Remove the toolhead rear housing (instructions coming soon). The fan is fastened onto the underside of the roof of this housing with 3 plastic-threading screws.

Cold Side Fan

Remove the front toolhead housing and the toolboard rear panel. The cold side fan is on the right side attached to a small duct. You can remove the fan from the duct without removing the duct from the toolhead assy.

Filter Fan

Remove the filter assy from the back of the printer. Remove both filter elements and the tray. The filter fan is held in with 2 plastic-threading screws. See our filter documentation for more info [HERE](#).